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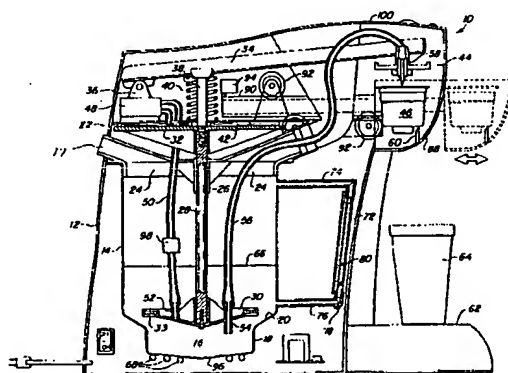
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(54) Title: SYSTEM FOR MONITORING AND CONTROLLING THE OPERATION OF A SINGLE SERVE BEVERAGE BREWER



(57) Abstract: An automated beverage brewing system includes a liquid storage tank and a metering chamber. The metering chamber is at least partially submerged beneath a standing level of liquid in the storage tank. The chamber includes a sealable liquid inlet port communicating with the interior of the storage tank beneath the standing level of liquid. The chamber also includes a liquid outlet port and an aperture that receives compressed air, wherein the compressed air forces liquid from the liquid output port of the chamber for use in preparing a brewed beverage. A pump provides the compressed air and a controller monitors a pressure signal value indicative of the air pressure in the metering chamber. The controller commands the pump on to commence flow of liquid from the metering chamber. The controller then commands the pump off several seconds after detecting a drop in air pressure within the chamber. A baffle is affixed to the distal end of a shaft, which is moved between a first and second position. In the second position the baffle seals a section of the storage tank to form the metering chamber. The system may also include a second brew pump that allows a user to customize the quantity of liquid delivered from the brewing system for a stronger brewed beverage.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 02/12291

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 A47J31/40 A47J31/32		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 A47J B67D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 142 063 A (BEAULIEU RODERICK H ET AL) 7 November 2000 (2000-11-07) column 2, line 21 -column 7, line 15; figures 1,4A ---	1-3, 18-20
Y	US 3 085 495 A (EDWARD ROSANDER AXEL) 16 April 1963 (1963-04-16) column 2, line 29-62; figure 1 ---	1-3, 18-20
A	US 5 111 740 A (KLEIN PETER) 12 May 1992 (1992-05-12) figure 1 ---	1-3, 18-20
A	US 6 082 247 A (BEAULIEU RODERICK H ET AL) 4 July 2000 (2000-07-04) the whole document -----	1,18
<input type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "8" document member of the same patent family		
Date of the actual completion of the international search  6 September 2002		Date of mailing of the international search report  05.12.2002
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx. 31 651 epo rd, Fax (+31-70) 340-3016		Authorized officer  Van Bastelaere, T

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/12291

### Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7, 18-21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: Independent claims 1, 18 and dependent claims 2-7, 19-21:

A brewer system for brewing a beverage from an extract contained in a sealed disposable cartridge

2. Claims: Independent claim 8 and dependent claims 9-17

A system for repeatedly delivering a volume of heated liquid

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/12291

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6142063	A	07-11-2000	NONE	
US 3085495	A	16-04-1963	US 2887038 A	19-05-1959
US 5111740	A	12-05-1992	CA 1269690 A1 DE 4007267 A1	29-05-1990 04-10-1990
US 6082247	A	04-07-2000	AU 2506700 A CA 2324223 A1 EP 1064524 A1 JP 2002535640 T WO 0043737 A1	07-08-2000 27-07-2000 03-01-2001 22-10-2002 27-07-2000

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